fixes the pattern of the coils, and that this gradient coil system further has cooling ducts of a water cooling system, the ducts being embedded in the resin molding material. The term "ducts," however is non-specific, and provides no more than a general teaching that some sort of pathway should be provided in the resin material for water flowing in a water cooling system. This could mean that the ducts are formed by channels that are molded into the resin material, so that no additional hose or conduit need even be present. Even if the term "ducts" is interpreted to embody some type of hose or conduit that is placed onto or into the resin molding material, there is no teaching or suggestion in the Sellers et al reference as to the structure or material of such a hose or conduit, and certainly there is no teaching that such a hose or conduit, if present, should be formed of non-resinous material, as set forth in claim 1 of the present application.

Moreover, even if some type of hose or conduit were embedded in the resin molding material (regardless of whether such a hose or conduit is composed of non-resinous material), this would not correspond to the structure of claim 1, because claim 1 states that the non-resinous heat insulator is disposed between at least one section of the conductor and the carrier structure that is formed by a resin casting. As explained in the introductory portion of the present specification, and as extensively discussed in Applicant's previous response, the non-resinous heat insulator is for the purpose of protecting the resinous material of the carrier structure from the very high temperatures that develop during the operation of the gradient coil in a magnetic resonance apparatus. This is why it is stated that the non-resinous heat insulator is disposed between at least one section of the conductor and the carrier structure that is formed by a resin casting. In conventional structures, the cooling conduit and the conductors of

the gradient coil have been arranged so that all, or substantially all, of the heat generated during the operation of the gradient coils must proceed through the resinous carrier material in order to reach the cooling conduit and the coolant therein. Only the present Applicant has recognized that this high heat causes damage to the resin. Counterintuitively, in the context of an arrangement intended to carry away heat, the present inventor has found that the presence of a heat insulator can be beneficial, and even more counterintuitively, the present inventor has found that disposing this heat insulator *between* the heat source (i.e. the gradient coil conductors) and the coolant still allows for a sufficient transfer of heat from the gradient coil conductors to the coolant, but avoids, or at least minimizes, the damage to the resin carrier structure that has occurred due to the high heat in conventional devices. Only the present inventor has had the insight to recognize that the disadvantage of decreasing the effectiveness of thermal transfer from the gradient coil conductors to the coolant, by the presence of a heat insulator, is outweighed by the advantage of producing less severe damage to the resinous material of the carrier structure.

The Sellers et al reference does not provide any recognition that this problem even exists, and therefore does not provide a solution to the problem, either in general or in terms of a specific structure employing a non-resinous insulator disposed between at least one section of the conductor and the carrier structure, as set forth in claim 1.

The Sellers et al reference, therefore, does not disclose all of the elements of claim 1 and therefore does not anticipate claim 1. claims 2-8, 10 and 13 add further structure to the novel combination of claim 1, and therefore are not anticipated by the Sellers et al reference for the same reasons discussed above in connection with claim 1.

The same consideration is applied to the Nerreter reference. The Examiner cited language at column 1, lines 40-59 of that reference as disclosing a non-resinous heat insulator disposed between at least one section of the conductor and the carrier structure.

This paragraph in the Nerreter reference merely describes, in the context of the prior art, the need for maintaining the temperature of a magnetic resonance apparatus during the operation thereof within a temperature band so that the center frequencies of the magnetic resonance signals which are registered at a time spacing of ten minutes do not deviate from each other by more than 20 Hz. This is merely a statement of a desirable goal for temperature control in the context of a magnetic resonance imaging apparatus, and does not provide any structure or teachings as to how to accomplish that goal. The inventive structure disclosed in the Nerreter et al reference may be considered as an effort to accomplish that goal, but certainly the language cited by the Examiner does not disclose or suggest any specific structure. The cooling arrangement disclosed in the Nerreter et al reference does not employ no-resinous material, and does not employ a heat insulator of any type disposed between the gradient coil conductors and the channel or conduit that carries the coolant. As noted above, disposing a heat insulator at this location (i.e. between the heat source and the coolant) is counterintuitive, because it decreases the effectiveness of the heat transfer from the heat source to the coolant. Disposing a heat insulator of any type at that location, much less a non-resinous heat insulator, makes sense only if one has already recognized the problems associated with the high heat to which the resinous carrier structure is exposed. If, as in the Nerreter reference, this problem has not been recognized, it

would make no sense whatsoever to dispose a heat insulator between the heat source and the coolant.

The Nerreter reference, therefore, does not disclose all of the elements of claim 1 as arranged and operating in that claim, and therefore does not anticipate claim 1. Claims 2-8 and 10 add further structure to the novel combination of claim 1, and therefore are not anticipated by the Nerreter reference for the same reasons discussed above in connection with claim 1.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Lastly, Applicant repeats the request that was made in Amendment A, filed September 4, 2002. Attached to the September 3, 2002 Office Action was Form 1449 from the Information Disclosure Statement that was filed January 29, 2002. That form 1449 was initialed by the Examiner. Applicant also filed an Information Disclosure Statement on July 30, 2001, but to date the Examiner has not provided the Applicant with a copy of Form 1449 from that Information Disclosure Statement, after being initialed by the Examiner. A copy of the return postcard for the second Information Disclosure Statement, indicating receipt at the Patent and Trademark Office on July 30, 2001 was attached to the aforementioned Amendment A. The Examiner is requested to review the Patent and Trademark Office file, and if that Information Disclosure Statement is present in the file, the Examiner is requested to provide Applicant with an initialed copy of Form 1449 for that Information Disclosure Statement. If the Information

Disclosure Statement filed July 30, 2001 is not in the Patent and Trademark Office file, the Examiner is requested to notify the undersigned counsel for the Applicant and it will be resubmitted.

Submitted by,

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